

Environmental Protection Agency

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shall state such information in the report. The start-up, shutdown, or malfunction report shall consist of a letter containing the name, title, and signature of the responsible official who is certifying its accuracy, that shall be submitted to the Administrator.

(ii) Separate start-up, shutdown, or malfunction reports are not required if the information is included in the report specified in paragraph (b)(6) of this section.

(6) A summary report specified in §63.10(e)(3) of this part shall be submitted on a semi-annual basis (i.e., once every six-month period). In addition to a report of operating parameter exceedances as required by §63.10(e)(3)(i), the summary report shall include, as applicable:

(i) Exceedances of the standards in §§ 63.824–63.825.

(ii) Exceedances of either of the criteria of § 63.820(a)(2).

(iii) Exceedances of the criterion of §63.821(b)(1) and the criterion of §63.821(b)(2) in the same month.

(iv) Exceedances of the criterion of §63.821(a)(2)(ii)(A).

§ 63.831 Delegation of authority.

(a) In delegating implementation and enforcement authority to a State under 40 CFR part 63 subpart E of this part, the authorities contained in paragraph (b) of this section shall be retained by the Administrator and not transferred to a State.

(b) Authority which will not be delegated to States: §63.827(b), approval of alternate test method for organic HAP content determination; §63.827(c), approval of alternate test method for volatile matter determination.

§§ 63.832–63.839 [Reserved]

TABLE 1 TO SUBPART KK.—APPLICABILITY OF GENERAL PROVISIONS TO SUBPART KK

| General provisions reference | Applicable to subpart KK | Comment |
|------------------------------|--------------------------|--|
| § 63.1(a)(1)–(a)(4) | Yes. | |
| § 63.1(a)(5) | No | Section reserved. |
| § 63.1(a)(6)–(a)(8) | No. | |
| § 63.1(a)(9) | No | Section reserved. |
| § 63.1(a)(10)–(a)(14) | Yes. | |
| § 63.1(b)(1) | No | Subpart KK specifies applicability. |
| § 63.1(b)(2)–(b)(3) | Yes. | |
| § 63.1(c)(1) | Yes. | |
| § 63.1(c)(2) | No | Area sources are not subject to subpart KK. |
| § 63.1(c)(3) | No | Section reserved. |
| § 63.1(c)(4) | Yes. | |
| § 63.1(c)(5) | No. | |
| § 63.1(d) | No | Section reserved. |
| § 63.1(e) | Yes. | |
| § 63.2 | Yes | Additional definitions in subpart KK. |
| § 63.3(a)–(c) | Yes. | |
| § 63.4(a)(1)–(a)(3) | Yes. | |
| § 63.4(a)(4) | No | Section reserved. |
| § 63.4(a)(5) | Yes. | |
| § 63.4(b)–(c) | Yes. | |
| § 63.5(a)(1)–(a)(2) | Yes. | |
| § 63.5(b)(1) | Yes. | |
| § 63.5(b)(2) | No | Section reserved. |
| § 63.5(b)(3)–(b)(6) | Yes. | |
| § 63.5(c) | No | Section reserved. |
| § 63.5(d) | Yes. | |
| § 63.5(e) | Yes. | |
| § 63.5(f) | Yes. | |
| § 63.6(a) | Yes. | |
| § 63.6(b)(1)–(b)(5) | Yes. | |
| § 63.6(b)(6) | No | Section reserved. |
| § 63.6(b)(7) | Yes. | |
| § 63.6(c)(1)–(c)(2) | Yes. | |
| § 63.6(c)(3)–(c)(4) | No | Sections reserved. |
| § 63.6(c)(5) | Yes. | |
| § 63.6(d) | No | Section reserved. |
| § 63.6(e) | Yes | Provisions pertaining to start-ups, shutdowns, malfunctions, and CMS do not apply unless an add-on control system is used. |
| § 63.6(f) | Yes. | |
| § 63.6(g) | Yes. | |

TABLE 1 TO SUBPART KK.—APPLICABILITY OF GENERAL PROVISIONS TO SUBPART KK—Continued

| General provisions reference | Applicable to subpart KK | Comment |
|------------------------------|--------------------------|---|
| § 63.6(h) | No | Subpart KK does not require COMS. |
| § 63.6(i)(1)–(i)(14) | Yes. | |
| § 63.6(i)(15) | No | Section reserved. |
| § 63.6(i)(16) | Yes. | |
| § 63.6(j) | Yes. | |
| § 63.7 | Yes. | |
| § 63.8(a)(1)–(a)(2) | Yes. | |
| § 63.8(a)(3) | No | Section reserved. |
| § 63.8(a)(4) | No | Subpart KK specifies the use of solvent recovery devices or oxidizers. |
| § 63.8(b) | Yes. | |
| § 63.8(c)(1)–(3) | Yes. | |
| § 63.8(c)(4) | No | Subpart KK specifies CMS sampling requirements. |
| § 63.8(c)(5) | No | Subpart KK does not require COMS. |
| § 63.8(c)(6)–(c)(8) | Yes | Provisions for COMS are not applicable. |
| § 63.8(d)–(f) | Yes. | |
| § 63.8(g) | No | Subpart KK specifies CMS data reduction requirements. |
| § 63.9(a) | Yes. | |
| § 63.9(b)(1) | Yes. | |
| § 63.9(b)(2) | Yes | Initial notification submission date extended. |
| § 63.9(b)(3)–(b)(5) | Yes. | |
| § 63.9(c)–(e) | Yes. | |
| § 63.9(f) | No | Subpart KK does not require opacity and visible emissions observations. |
| § 63.9(g) | Yes | Provisions for COMS are not applicable. |
| § 63.9(h)(1)–(h)(3) | Yes. | |
| § 63.9(h)(4) | No | Section reserved. |
| § 63.9(h)(5)–(h)(6) | Yes. | |
| § 63.9(i) | Yes. | |
| § 63.9(j) | Yes. | |
| § 63.10(a) | Yes. | |
| § 63.10(b)(1)–(b)(3) | Yes. | |
| § 63.10(c)(1) | Yes. | |
| § 63.10(c)(2)–(c)(4) | No | Sections reserved. |
| § 63.10(c)(5)–(c)(8) | Yes. | |
| § 63.10(c)(9) | No | Section reserved. |
| § 63.10(c)(10)–(c)(15) | Yes. | |
| § 63.10(d)(1)–(d)(2) | Yes. | |
| § 63.10(d)(3) | No | Subpart KK does not require opacity and visible emissions observations. |
| § 63.10(d)(4)–(d)(5) | Yes. | |
| § 63.10(e) | Yes | Provisions for COMS are not applicable. |
| § 63.10(f) | Yes. | |
| § 63.11 | No | Subpart KK specifies the use of solvent recovery devices or oxidizers. |
| § 63.12 | Yes. | |
| § 63.13 | Yes. | |
| § 63.14 | Yes. | |
| § 63.15 | Yes. | |

APPENDIX A TO SUBPART KK TO PART 63—DATA QUALITY OBJECTIVE AND LOWER CONFIDENCE LIMIT APPROACHES FOR ALTERNATIVE CAPTURE EFFICIENCY PROTOCOLS AND TEST METHODS

1. Introduction

1.1 Alternative capture efficiency (CE) protocols and test methods that satisfy the criteria of either the data quality objective (DQO) approach or the lower confidence limit (LCL) approach are acceptable under § 63.827(f). The general criteria for alternative CE protocols and test methods to qualify under either the DQO or LCL ap-

proach are described in section 2. The DQO approach and criteria specific to the DQO approach are described in section 3. The LCL approach and criteria specific to the LCL approach are described in section 4. The recommended reporting for alternative CE protocols and test methods are presented in section 5. The recommended recordkeeping for alternative CE protocols and test methods are presented in section 6.

1.2 Although the Procedures L, G.1, G.2, F.1, and F.2 in § 52.741 of part 52 were developed for TTE and BE testing, the same procedures can also be used in an alternative CE protocol. For example, a traditional liquid/gas mass balance CE protocol could employ

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Procedure L to measure liquid VOC input and Procedure G.1 to measure captured VOC.

2. General Criteria for DQO and LCL Approaches

2.1 The following general criteria must be met for an alternative capture efficiency protocol and test methods to qualify under the DQO or LCL approach.

2.2 An alternative CE protocol must consist of at least three valid test runs. Each test run must be at least 20 minutes long. No test run can be longer than 24 hours.

2.3 All test runs must be separate and independent. For example, liquid VOC input and output must be determined independently for each run. The final liquid VOC sample from one run cannot be the initial sample for another run. In addition, liquid input for an entire day cannot be apportioned among test runs based on production.

2.4 Composite liquid samples cannot be used to obtain an "average composition" for a test run. For example, separate initial and final coating samples must be taken and analyzed for each run; initial and final samples cannot be combined prior to analysis to derive an "average composition" for the test run.

2.5 All individual test runs that result in a CE of greater than 105 percent are invalid and must be discarded.

2.6 If the source can demonstrate to the regulatory agency that a test run should not be considered due to an identified testing or analysis error such as spillage of part of the sample during shipping or an upset or improper operating conditions that is not considered part of normal operation then the test result for that individual test run may

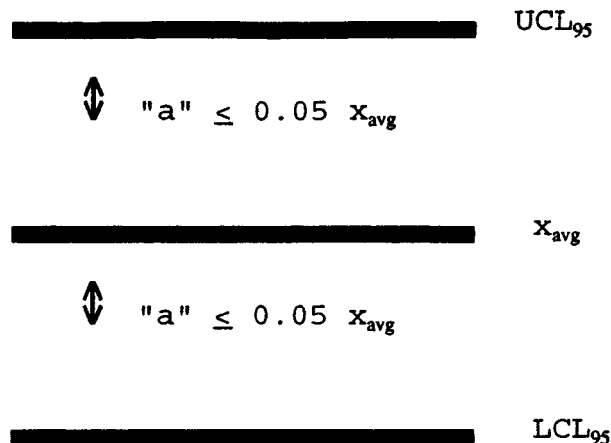
be discarded. This limited exception allows sources to discard as "outliers" certain individual test runs without replacing them with a valid test run as long as the facility has at least three valid test runs to use when calculating its DQO or LCL. This exception is limited solely to test runs involving the types of errors identified above.

2.7 All valid test runs that are conducted must be included in the average CE determination. The individual test run CE results and average CE results cannot be truncated (i.e., 105 percent cannot be reported as 100+ percent) for purposes of meeting general or specific criteria for either the DQO or the LCL. If the DQO is satisfied and the average CE is greater than 100, then 100 percent CE must be considered the result of the test.

2.8 Alternative test methods for measuring VOC concentration must include a three-point calibration of the gas analysis instrument in the expected concentration range.

3. Data Quality Objective Approach

3.1 The purpose of the DQO is to allow sources to use alternative CE protocols and test methods while ensuring reasonable precision consistent with pertinent requirements of the Clean Air Act. In addition to the general criteria described in section 2, the specific DQO criterion is that the width of the two-sided 95 percent confidence interval of the mean measured value must be less than or equal to 10 percent of the mean measured value (see Figure 1). This ensures that 95 percent of the time, when the DQO is met, the actual CE value will be ± 5 percent of the mean measured value (assuming that the test protocol is unbiased).



3.2 The DQO calculation is made as follows using Equations 1 and 2:

$$P = \frac{a}{x_{\text{avg}}} 100 \quad \text{Eq 1}$$

$$a = \frac{t_{0.975} s}{\sqrt{n}} \quad \text{Eq 2}$$

Where:

a=distance from the average measured CE value to the endpoints of the 95-percent

(two-sided) confidence interval for the measured value.

n=number of valid test runs.

P=DQO indicator statistic, distance from the average measured CE value to the endpoints of the 95-percent (two-sided) confidence interval, expressed as a percent of the average measured CE value.

s=sample standard deviation.

$t_{0.975}$ =t-value at the 95-percent confidence level (see Table 1).

x_{avg} =average measured CE value (calculated from all valid test runs).

x_i =the CE value calculated from the *i*th test run.

| Number of valid test runs, n | $t_{0.975}$ | $t_{0.90}$ | Number of valid test runs, n | $t_{0.975}$ | $t_{0.90}$ |
|------------------------------|-------------|------------|------------------------------|-------------|------------|
| 1 or 2 | N/A | N/A | 12 | 2.201 | 1.363 |
| 3 | 4.303 | 1.886 | 13 | 2.179 | 1.356 |
| 4 | 3.182 | 1.638 | 14 | 2.160 | 1.350 |
| 5 | 2.776 | 1.533 | 15 | 2.145 | 1.345 |
| 6 | 2.571 | 1.476 | 16 | 2.131 | 1.341 |
| 7 | 2.447 | 1.440 | 17 | 2.120 | 1.337 |
| 8 | 2.365 | 1.415 | 18 | 2.110 | 1.333 |
| 9 | 2.306 | 1.397 | 19 | 2.101 | 1.330 |
| 10 | 2.262 | 1.383 | 20 | 2.093 | 1.328 |
| 1 | 12.228 | 1.372 | 21 | 2.086 | 1.325 |

TABLE 1.—T-VALUES

3.3 The sample standard deviation and average CE value are calculated using Equations 3 and 4 as follows:

$$s = \left[\frac{\sum_{i=1}^n (x_i - x_{\text{avg}})^2}{n-1} \right]^{0.5} \quad \text{Eq 3}$$

$$x_{\text{avg}} = \frac{\sum_{i=1}^n x_i}{n} \quad \text{Eq 4}$$

3.4 The DQO criteria are achieved when all of the general criteria in section 2 are achieved and $P \leq 5$ percent (i.e., the specific DQO criterion is achieved). In order to meet this objective, facilities may have to conduct more than three test runs. Examples of calculating P, given a finite number of test runs, are shown below. (For purposes of this example it is assumed that all of the general criteria are met.)

3.5 Facility A conducted a CE test using a traditional liquid/gas mass balance and submitted the following results and the calculations shown in Equations 5 and 6:

| Run | CE |
|---------|-------|
| 1 | 96.1 |
| 2 | 105.0 |
| 3 | 101.2 |

Therefore:

$n=3$

$t_{0.975}=4.30$

$x_{\text{avg}}=100.8$

$s=4.51$

$$a = \frac{(4.30)(4.51)}{\sqrt{n}} = 11.20 \quad \text{Eq 5}$$

$$P = \frac{11.2}{100.8} 100 = 11.11 \quad \text{Eq 6}$$

3.6 Since the facility did not meet the specific DQO criterion, they ran three more test runs.

| Run | CE |
|---------|------|
| 4 | 93.2 |
| 5 | 96.2 |
| 6 | 87.6 |

3.7 The calculations for Runs 1-6 are made as follows using Equations 7 and 8:

$n=6$

$t_{0.975}=2.57$

$x_{\text{avg}}=96.6$

$s=6.11$

$$a = \frac{(2.57)(6.11)}{\sqrt{6}} = 6.41 \quad \text{Eq 7}$$

$$P = \frac{6.41}{96.6} 100 = 6.64 \quad \text{Eq 8}$$

3.8 The facility still did not meet the specific DQO criterion. They ran three more test runs with the following results:

| Run | CE |
|---------|------|
| 7 | 92.9 |
| 8 | 98.3 |
| 9 | 91.0 |

3.9 The calculations for Runs 1-9 are made as follows using Equations 9 and 10:

$$\begin{aligned} n &= 9 \\ t_{0.975} &= 2.31 \\ \bar{x}_{\text{avg}} &= 95.7 \\ s &= 5.33 \end{aligned}$$

$$a = \frac{(2.31)(5.33)}{\sqrt{9}} = 4.10 \quad \text{Eq 9}$$

$$P = \frac{4.10}{95.7} 100 = 4.28 \quad \text{Eq 10}$$

3.10 Based on these results, the specific DQO criterion is satisfied. Since all of the general criteria were also satisfied, the average CE from the nine test runs can be used to determine compliance.

4. Lower Confidence Limit Approach

4.1 The purpose of the LCL approach is to provide sources, that may be performing much better than their applicable regulatory requirement, a screening option by which they can demonstrate compliance. The approach uses less precise methods and avoids additional test runs which might otherwise be needed to meet the specific DQO criterion while still being assured of correctly demonstrating compliance. It is designed to reduce "false positive" or so called "Type II errors" which may erroneously indicate compliance where more variable test methods are employed. Because it encourages CE performance greater than that required in exchange for reduced compliance demonstration burden, the sources that successfully use the LCL approach could produce emission reductions beyond allowable emissions. Thus, it could provide additional benefits to the environment as well.

4.2 The LCL approach compares the 80 percent (two-sided) LCL for the mean measured CE value to the applicable CE regulatory requirement. In addition to the general criteria described in section 2, the specific LCL criteria are that either the LCL be

greater than or equal to the applicable CE regulatory requirement or that the specific DQO criterion is met. A more detailed description of the LCL approach follows:

4.3 A source conducts an initial series of at least three runs. The owner or operator may choose to conduct additional test runs during the initial test if desired.

4.4 If all of the general criteria are met and the specific DQO criterion is met, then the average CE value is used to determine compliance.

4.5 If the data meet all of the general criteria, but do not meet the specific DQO criterion; and the average CE, using all valid test runs, is above 100 percent then the test sequence cannot be used to calculate the LCL. At this point the facility has the option of (a) conducting more test runs in hopes of meeting the DQO or of bringing the average CE for all test runs below 100 percent so the LCL can be used or (b) discarding all previous test data and retesting.

4.6 The purpose of the requirement in Section 4.5 is to protect against protocols and test methods which may be inherently biased high. This is important because it is impossible to have an actual CE greater than 100 percent and the LCL approach only looks at the lower end variability of the test results. This is different from the DQO which allows average CE values up to 105 percent because the DQO sets both upper and lower limits on test variability.

4.7 If at any point during testing the results meet the DQO, the average CE can be used for demonstrating compliance with the applicable regulatory requirement. Similarly, if the average CE is below 100 percent then the LCL can be used for demonstrating compliance with the applicable regulatory requirement without regard to the DQO.

4.8 The LCL is calculated at a 80 percent (two-sided) confidence level as follows using Equation 11:

$$LC_1 = \bar{x}_{\text{avg}} - \frac{t_{0.90}s}{\sqrt{n}} \quad \text{Eq 11}$$

Where:

LC₁=LCL at a 80 percent (two-sided) confidence level.

n=number of valid test runs.

s=sample standard deviation.

t_{0.90}=t-value at the 80-percent (two-sided) confidence level (see Table 3-1).

\bar{x}_{avg} =average measured CE value (calculated from all valid test runs).

4.9 The resulting LC₁ is compared to the applicable CE regulatory requirement. If LC₁ exceeds (i.e., is higher than) the applicable regulatory requirement, then a facility is in initial compliance. However, if the LC₁ is below the CE requirement, then the facility must conduct additional test runs. After this point the test results will be evaluated not

only looking at the LCL, but also the DQO of ± 5 percent of the mean at a 95 percent confidence level. If the test results with the additional test runs meet the DQO before the LCL exceeds the applicable CE regulatory requirement, then the average CE value will be compared to the applicable CE regulatory requirement for determination of compliance.

4.10 If there is no specific CE requirement in the applicable regulation, then the applicable CE regulatory requirement is determined based on the applicable regulation and an acceptable destruction efficiency test. If the applicable regulation requires daily compliance and the latest CE compliance demonstration was made using the LCL approach, then the calculated LC_1 will be the highest CE value which a facility is allowed to claim until another CE demonstration test is conducted. This last requirement is necessary to assure both sufficiently reliable

test results in all circumstances and the potential environmental benefits referenced above.

4.11 An example of calculating the LCL is shown below. Facility B's applicable regulatory requirement is 85 percent CE. Facility B conducted a CE test using a traditional liquid/gas mass balance and submitted the following results and the calculation shown in Equation 12:

| Run | CE |
|---------|------|
| 1 | 94.2 |
| 2 | 97.6 |
| 3 | 90.5 |

Therefore:

$n=3$
 $t_{0.90}=1.886$
 $\bar{x}_{avg}=94.1$
 $s=3.55$

$$LC_1 = 94.1 - \frac{(1.886)(3.55)}{\sqrt{3}} = 90.23 \quad \text{Eq 12}$$

4.12 Since the LC_1 of 90.23 percent is above the applicable regulatory requirement of 85 percent then the facility is in compliance. The facility must continue to accept the LC_1 of 90.23 percent as its CE value until a new series of valid tests is conducted. (The data generated by Facility B do not meet the specific DQO criterion.)

5. Recommended Reporting for Alternative CE Protocols

5.1 If a facility chooses to use alternative CE protocols and test methods that satisfy either the DQO or LCL and the additional criteria in section 4., the following information should be submitted with each test report to the appropriate regulatory agency:

1. A copy of all alternative test methods, including any changes to the EPA reference methods, QA/QC procedures and calibration procedures.
2. A table with information on each liquid sample, including the sample identification, where and when the sample was taken, and the VOC content of the sample;
3. The coating usage for each test run (for protocols in which the liquid VOC input is to be determined);
4. The quantity of captured VOC measured for each test run;
5. The CE calculations and results for each test run;
6. The DQO or LCL calculations and results; and
7. The QA/QC results, including information on calibrations (e.g., how often the in-

struments were calibrated, the calibration results, and information on calibration gases, if applicable).

6. Recommended Recordkeeping for Alternative CE Protocols.

6.1 A record should be kept at the facility of all raw data recorded during the test in a suitable form for submittal to the appropriate regulatory authority upon request.

Subpart LL—National Emission Standards for Hazardous Air Pollutants for Primary Aluminum Reduction Plants

AUTHORITY: 62 FR 52407, Oct. 7, 1997, unless otherwise noted.

§ 63.840 Applicability.

(a) Except as provided in paragraph (b) of this section, the requirements of this subpart apply to the owner or operator of each new pitch storage tank and new or existing potline, paste production plant, or anode bake furnace associated with primary aluminum production and located at a major source as defined in § 63.2.

(b) The requirements of this subpart do not apply to any existing anode bake furnace that is not located on the